DEPARTMENT OF DEFENSE
PLAN FOR ENERGY CONSERVATION AT DEFENSE FACILITIES

To Meet the requirements of the Presidential Directive on
Energy Conservation at Federal Facilities.

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DEPARTMENT OF DEFENSE
IMPLEMENTATION PLAN

Introduction. On May 3, 2001 President Bush issued a directive to the heads of executive departments and agencies ("agencies") to take appropriate actions to conserve energy use at their facilities to the maximum extent consistent with the effective discharge of public responsibilities. Agencies located in regions where electricity shortages are possible should conserve use especially during periods of peak demand.

This plan not only requires a energy conservation and improvement in energy management, it also instructs the Defense Components to provide leadership to promote energy efficiency, the use of non-fossil fuel energy products, and to help foster markets for emerging technologies. The Department of Defense (DoD) has undertaken an integrated program to optimize the management of its utility systems—seeking to increase efficiency and reduce costs while improving reliability and safety. This program has three elements: (1) reducing energy consumption; (2) taking advantage of deregulated energy commodity markets; and (3) privatizing the utilities infrastructure.

Conserving energy is important to the Department, because it saves money and reduces greenhouse gas emissions harmful to the environment. In Fiscal Year (FY) 2000, DoD spent over $2.4 billion to buy energy for its installations, consuming over 243 trillion British Thermal Units (BTU). DoD intends to meet the goals of this order by implementing the following broad strategies:

- Implement cost-effective energy conservation projects with direct appropriations and alternative financing through Utility Energy Service Contracts (UESC) and Energy Savings Performance Contracts (ESPC), and by procuring energy-efficient products and services.
- Implement energy conservation and consumption reduction measures to achieve energy efficiency nationwide and reduce consumption during period of peak demand in regions where electricity shortages are imminent.
- Promote energy non-fossil fuel technology by purchasing non-fossil fuel power and implementing non-fossil fuel energy projects when cost-effective based on life cycle analysis.

This plan was built upon each Defense Component's submitted FY 2000 Implementation Plan and nationwide electricity reduction data call and has been prepared to meet the Department of Energy (DoE) reporting requirements for the President's Directive to conserve energy. In addition, the plan will provide general guidance to DoD facility managers, energy managers, and other decision makers on the requirements of the order and strategies to adopt and actions to take to meet these requirements. Each Defense Component shall comply with the general measures of this plan as well as there own submitted implementation plan's specific measures.

Goals of the Plan. This plan sets forth seven goals for the Defense Components to meet in order to significantly improve DoD's energy management, thereby saving taxpayer dollars and reducing emissions that contribute to air pollution and global climate change. These goals are:

- **Greenhouse Gases Reduction** - Through life-cycle cost-effective measures, DoD shall reduce its greenhouse gas emissions attributed to facility energy use by 30 percent by 2010 compared to such emissions levels in 1990.

- **Energy Efficiency Improvement** - Through life-cycle cost-effective measures, DoD shall reduce energy consumption per gross square foot of its facilities, excluding facilities covered in section 203 of the order, by 30 percent by 2005 and 35 percent by 2010 relative to 1985.
- **Industrial and Laboratory Facilities** - Through life-cycle cost-effective measures, DoD shall reduce energy consumption in Industrial and Laboratory Facilities per gross square foot, per unit of production, or per other unit as applicable by 20 percent by 2005 and by 25 percent by 2010 relative to 1990.
- **Non-Fossil Fuel Energy** - DoD agency shall strive to expand the use of non-fossil fuel energy within its facilities and in its activities by implementing non-fossil fuel energy projects and by purchasing electricity from non-fossil fuel energy sources. In support of the Million Solar Roofs initiative, the Federal Government shall strive to install 2,000 solar energy systems at Federal facilities by the end of 2000, and 20,000 solar energy systems at Federal facilities by 2010.
- **Petroleum Use** - Through life-cycle cost-effective measures, DoD shall reduce the use of petroleum within its facilities. Defense Components may accomplish this reduction by switching to a less greenhouse gas-intensive, nonpetroleum energy source, such as natural gas or non-fossil fuel energy sources; by eliminating unnecessary fuel use; or by other appropriate methods.
- **Source Energy** - DoD shall strive to reduce total energy use and associated greenhouse gas and other air emissions, as measured at the source. To that end, Defense Components shall undertake life-cycle cost-effective projects in which source energy decreases, even if site energy use increases.

I. <u>Management and Administration</u>. Energy management on DoD installations is focused on improving efficiency, eliminating waste, and enhancing the quality of life while meeting mission requirements. Accomplishing these objectives will reduce costs and ensure that the Presidential Directive is achieved.

The DoD facilities energy program is decentralized with Defense Component headquarters providing guidance and funding, and each military installation managing site-specific energy conservation programs. Funding of energy projects is multi-faceted using a combination of Government and alternative financing initiatives. Installations are responsible for maintaining awareness, developing and implementing projects, and ensuring that new construction meets sustainable design criteria.

A. Energy Management Infrastructure.

1. Senior Agency Official and Agency Energy Team. The Principal Deputy Under Secretary of Defense (Acquisition, Technology and Logistics) is the DoD Senior Agency Official responsible for meeting the goals of this plan. The existing DoD Installations Policy Board (IPB), chaired by the Deputy Under Secretary of Defense (Installations) and chartered to address a broad spectrum of installations issues, has been designated as the DoD Agency Energy Team. The membership of the IPB contains the cross-section of DoD senior leadership necessary to make decisions needed to remove obstacles hindering compliance with the EO.

B. Management Tools. To reach the goals of the plan, Defense Components will use a variety of management tools, including:

1. Awards. Energy conservation awards are to be presented to individuals, organizations, and installations in recognition of their energy-savings conservation efforts. In addition to recognition, these awards provide motivation for continued energy-reduction achievements. The Components will continue their very successful individual awards programs and also will participate in the DoE Federal Energy and Water Management Awards Program. This program recognizes organizations, small groups, and individuals for outstanding achievements in several energy-related categories within the Federal sector. Categories include energy management, non-fossil fuel energy, water conservation, ESPC, and beneficial landscaping. Each Service can also recognize one outstanding individual for overall contribution to the program. Additionally, the Components will continue to incorporate on-the-spot awards and incentive awards to recognize exceptional performance and participation in the energy management program.

2. **Performance Evaluations.** Energy management provisions will continue to be included in performance plans of the DoD Energy Chain of Command, including major command, base and site energy managers.

3. Training and Education. Awareness and training programs are important for DoD to achieve and sustain energy-efficient operations at the installation level. For FY 2001, DoD's goal is to train over 1,900 personnel through either commercially available or in-house-generated technical courses, seminars, conferences, software, videos, and certifications. Additionally, DoD personnel will be encouraged to attend the Energy 2001 conference in Kansas City, Missouri.

DoD will continue to have an active program to identify and procure energy-efficient products through the Defense Logistics Agency (DLA). DLA and General Services Administration (GSA) product catalogs will be widely used, as well as the Construction Criteria Base (available on CD-ROM and the Internet). Purchasing agents are strongly encouraged to procure ENERGY STAR® products and products in the top 25 percent of energy efficiency when they are cost-effective.

4. Showcase Facilities. Showcase facilities demonstrate the use of innovative techniques to improve energy efficiency. Although hindered by a lack of funding in previous years, the Department intends to emphasize the benefit of these facilities, with a target of each Service developing at least one showcase facility per year.

II. Implementation Strategies. It is DoD's philosophy to give the Defense Components the flexibility of managing their own energy programs to meet these goals. The primary objectives are to improve energy efficiency and eliminate energy waste.

A. Life-Cycle Cost Analysis. DoD facilities will continue to utilize life-cycle cost analysis in making decisions about their investment in products, services, construction, and other projects to lower the Federal Government's costs and to reduce energy consumption. DoD will consider the life-cycle-costs of combining projects, and encourages bundling of energy efficiency projects with non-fossil fuel energy projects, where appropriate. The use of passive solar design and active solar technologies will be required when cost-effective over the life of the project. Sustainable development projects will continue to use life-cycle costing methodology and follow the whole building design guide.

B. Facility Energy Audits. Energy audits evaluate current energy usage and assist installations in determining the best locations to incorporate energy savings measures. Components are encouraged to use either appropriated funding or alternative financing through UESC and ESPC projects to conduct their energy audits. In addition to facility audits, software such as Renewable and Energy Efficiency Planning and the Federal Energy Decision Screening system have been developed to assist this process by determining the investment required to implement energy projects with a 10-year payback or better.

C. Financing Mechanisms. Partnerships with the private sector through Utility Energy Service Contracts (UESC) and Energy Savings Performance Contracts (ESPC) are a crucial tool for financing energy efficiency measures and allow installations to improve their infrastructure and pay for the energy efficiency measures through the savings generated by the project over time. For FY 2001, DoD through a decentralized approach will strive to award approximately 112 UESC and ESPC task orders/contracts to produce an estimated annual savings of 2.68 trillion Btu. These contracts will include infrastructure upgrades and new equipment to help the installations reduce energy consumption. Projects will consist of new thermal storage systems, chillers, boilers, lights, motors, and EMCS systems. For FY 2001, Congress appropriated $15 million for the Energy Conservation Investment Program (ECIP) and added $4 million to assist the ESPC process.

D. ENERGY STAR® and Other Energy-Efficient Products. When life-cycle cost-effective, the Defense Components are encouraged to select ENERGY STAR® and other energy-efficient products when acquiring energy-consuming products. Guidance generated by DoE, GSA and DLA for energy–efficient products are being incorporated into the sustainable design and development of new and renovated facilities. Defense components will invest in energy-efficient technologies, such as high efficiency lighting and ballasts, energy-efficient motors, and use of packaged heating and cooling equipment with energy efficiency ratios (EER) that meet or exceed Federal criteria for retrofitting existing buildings. Information technology hardware, computers and copying equipment will be acquired under the Energy Star Program using GSA Schedules, Government-wide contracts, or Service Contracts. The DLA distribution centers serve as the focal point of DoD's program to procure energy efficient products and will continue to be a leader in increasing the use of these products by

such programs as their two-for-one compact fluorescent light initiative. Procuring agents, including users of government credit cards, will continue to be encouraged to procure ENERGY STAR® products and other products in the top 25 percent of energy efficiency.

E. ENERGY STAR® Buildings. The ENERGY STAR® Building program was developed by the U.S. Environmental Protection Agency (EPA) to promote energy efficiency in buildings. Actual ENERGY STAR® Buildings certification and labeling is based on measured building data and a comparison with archetypes in various regions of the country. Since DoD buildings are not generally metered and temporary metering schemes may be cost prohibitive, DoD has not been able to certify buildings under this program. However, DoD, DoE, and EPA completed a memorandum of understanding regarding ENERGY STAR® labels for all DoD buildings in June 1997. The MOU considers buildings as ENERGY STAR® buildings equivalents if they were included in comprehensive audits and all projects with a 10-year or better payback are implemented, to the maximum extent practicable, within agency resources and allows the installation to self-certify and develop a local label for non-metered buildings. DoD components will strive to assess their building against the ENERGY STAR® criteria to determine an accurate count of the number of buildings in which energy projects with a 10-year or better payback have been installed and report this equivalent number for the FY 2001 Annual Energy Report.

F. Sustainable Building Design. Sustainability initiatives require an integrated design approach to the life-cycle of buildings and infrastructure. The concepts of sustainable development as applied to DoD installations will continue to be incorporated into the master planning process of each of the Services. Installations are encouraged to approach land use planning and urban design in a holistic manner and integrate it with energy planning. Additional information on "sustainable design" can be found in the "Whole Building Design Guide." This intuitive, internet-based tool (located at www.wbdg.org) serves as a portal to the design criteria and other resources needed to construct cost-effective, sustainable buildings.

G. Energy Efficiency in Lease Provisions. DoD will continue to emphasizes energy conservation in leased facilities and each Service will issue guidance directing that all leased spaces shall comply with the energy efficiency requirements of the Energy Policy Act of 1992. While some of the Services are moving away from the use of leased buildings, preferring to make use of government-owned facilities, where leasing of building continues, it is DoD's intent to have the landlord make appropriate investments in energy efficiency. These investments should be amortized in the lease, provided the new total cost (energy costs plus lease cost) does not exceed total costs without improvements. These leases will amortize the investments over the economic life of the improvements. Build-to-lease solicitations for DoD facilities will contain criteria encouraging sustainable design and development, energy efficiency, and verification of building performance. DoD will continue to rely upon GSA to ensure the above provisions are included in buildings that they lease for DoD.

H. Industrial Facility Efficiency Improvements. Initiatives for industrial facility efficiency improvements utilizing fuel switching, waste heat usage, and thermal storage units will continue for FY 2001. Dual-path air conditioning to control humidity as an alternative to natural gas or propane fired desiccant dehumidification systems, heat-pipe technology for dehumidification, and domestic hot water heat reclaim systems will continue to be utilized for commissary stores. Exploration in efficiency opportunities in non-fossil fuel energy technologies such as geothermal ground source heat pumps and photovoltaics will also be continued.

I. Highly Efficient Systems. DoD encourages the Components to combine cooling, heating, and power systems in new construction and/or retrofit projects when cost-effective. Components are also encouraged to survey local natural resources to optimize use of available biomass, bioenergy, geothermal, and other non-fossil fuel or naturally occurring energy sources when life-cycle cost-effective.

J. Off-Grid Generation. DoD will continue to pursue off-grid generation where it is life-cycle cost-effective. Innovative energy reduction technologies will be utilized for FY 2001. Examples being planned by the Components include large photovoltaic arrays, solar lighting for parking lots and jogging trails, wind turbine generators and fuel cell demonstration projects.

K. Cost-Effective Non-Fossil Fuel Energy. DoD is committed to creating opportunities to install cost-effective non-fossil fuel energy technology. Recent events in California and elsewhere demonstrate the need to expand the Nation's electricity generation capacity. As the price of conventional power sources increase and technological advances improve their efficiency, non-fossil fuel sources become attractive, cost-effective alternatives. Therefore, all solicitations for the competitive purchase of electricity in States that have restructured their electricity markets shall include provisions for procuring cost-effective non-fossil fuel power. Information on green power purchasing can be found at www.gsa.gov/pbs.

L. Electricity Restructuring and Utilities Privatization. The Department intends to take maximum advantage of electricity rate restructuring to lower its energy costs, and will include green power in its procurements where it is cost-effective. Where practicable, Components shall take advantage of opportunities to regionally bundle the diverse loads of their installations to create greater buying power. DoD will continue its efforts to privatize its utility systems. Defense Reform Initiative Directive #49 directs the Military Departments to develop plans for privatizing all of their utility systems by September 30, 2003. This initiative is designed to allow the Services to manage resources rather than utility infrastructure—using the expertise and investment capital of local utilities and private-sector entities to modernize, operate, and maintain their utility systems more efficiently and effectively. Increased energy efficiency will be an important side-benefit from this program as privatized utility systems become better maintained and incorporate the latest technological innovations.

M. Electrical Load Reduction Measures. DoD has developed the attached list of energy conservation measures and investment projects for electrical load reductions that will be taken during power emergencies or implemented as needed to cut electricity consumption in buildings and facilities subject to funding availability.